

## From Membrane Proteins to Venus Landers—an Ardent Scientist Extends his Reach

For more than 60 years, Distinguished Alumnus **John W. Miles (BS '42, MS '43, MS '44, PhD '44)** worked six days a week with pleasure. After two decades in electrical and aeronautical engineering, he spent four studying geophysical fluid dynamics at Scripps Institution of Oceanography—investigating supersonic flow, tides, ocean currents, and water waves.

A friend, the late David Saxon, once recalled an early indicator of Miles's fearless dedication to science: "John elected to pursue his dissertation under W. R. Smythe—of whom so many brilliant Caltech students stood in stark terror." Saxon went on to note that when Miles took on administrative responsibilities in addition to his daily regimen of bicycling and surfing, swimming, or hiking, his science suffered a bit. "From 1946 to 1988 John averaged a bit more than 7.6

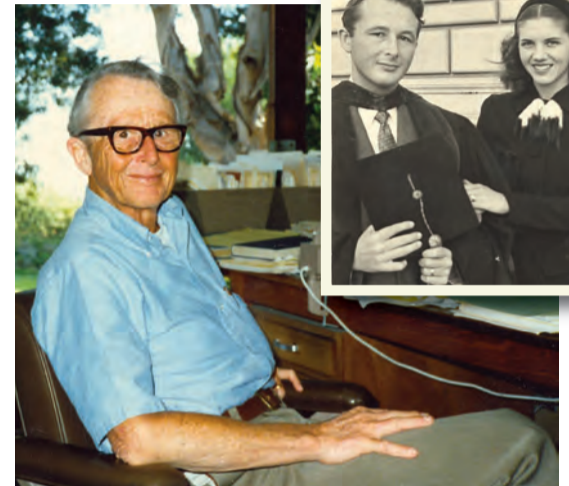


Rustem Ismagilov, the John W. and Herberta M. Miles Professor of Chemistry and Chemical Engineering

publications per year. But when he was chairman of his department from 1968 to 1972, his average plunged all the way to 6.6 publications, and it fell to a dismal 6.5 publications per year when he was vice chancellor."

Though Miles died in 2008, his contributions to science continue to grow. That is because he and his wife, **Herbie**, established a charitable remainder unitrust (CRT) that helped them achieve their personal estate planning objectives. When the couple passed away, the CRT, in addition to a bequest, endowed a professorship and a scholarship fund.

**Rustem Ismagilov** has just been named the inaugural John W. and Herberta M. Miles Professor of Chemistry and Chemical Engineering. In one of the early indications of his scientific drive, Ismagilov performed over a thousand membrane-protein crystallizations in 30 minutes. To be fair, he credits his students with breakthroughs in droplet microfluidic technologies that took much of the handwork out of the process. Born in Ufa, Russia, the graduate of the Russian Academy of Sciences and UW–Madison did his postdoctoral work with Distinguished Alumnus George Whitesides (PhD '64) at Harvard. He comes to Caltech this year from the University of Chicago. Ismagilov aims to understand how networks of biochemical reactions can give rise to the complexity seen



Right: John and Herbie attending Caltech's 1942 commencement. Left: John W. Miles (BS '42, MS '43, MS '44, PhD '44).

in biological systems—orchestration that amazes him because it endows these systems with the ability to respond and adapt to their environments, perform fascinating functions, and even think.

**Teri Juarez**, a current beneficiary of *An Ardent Scientist*, continued on page 2

## Recent Changes in Estate Taxes

The Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010, which passed December 16, temporarily changes federal estate tax laws. For 2011 and 2012, estate tax exclusions increase to \$5 million (married couples can exempt \$10 million) and the estate tax rate lowers to 35 percent. The act also reinstates the IRA Charitable Rollover (see page 3, *Did You Know?*).

Had the act not passed, sunset provisions included in the Economic Growth and Tax Relief Reconciliation Act of *Estate Taxes*, continued on page 2

## Caltech Legacies

When **Nico (Nick) van Wingen** was a Caltech undergraduate in the 1930s, he would occasionally run into Albert Einstein, a frequent visitor to the Institute back then. That memory stayed with him throughout his life.

As a result, when van Wingen and his wife, **Marilyn**, established a number of planned gifts with Caltech that provided them with income during their lifetimes,

they hoped that these gifts would eventually create an endowed professorship at Caltech. A petroleum engineer and educator, van Wingen, who passed away in 1990, would have been 100 years old this year. His memory lives on at Caltech.

Following Marilyn's death, the van Wingen's hope became a reality when proceeds from her estate and their planned gifts funded a named professorship. In 2004, geobiologist **Joe Kirschvink (BS '75, MS '75)** was named the Nico

and Marilyn van Wingen Professor of Geobiology. He focuses on understanding how biological evolution has influenced, and has been influenced by, major events on Earth's surface. His research looks back in time, while the van Wingen legacy propels it forward.



Nico (BS '34) and Marilyn van Wingen

## TECHNIQUES — Spring 2011

### An Ardent Scientist

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the Miles scholarship, is a junior in mechanical engineering and a two-sport athlete who headlined this winter's *NCAA Champion* magazine. Vice president of the Caltech Latino Association of Student Engineers and Scientists, Juarez also volunteers in the community. But her passion is engineering—the El Paso,



Teri Juarez (class of 2013) graced the cover of the winter issue of *NCAA Champion* magazine. Photo courtesy of *NCAA Champion* magazine.

Texas, native knew she wanted to be an engineer in the eighth grade. Recently, she worked with Mike Pauken at JPL, where she created ways to test the thermal protective capacity of a phase-change material designed to shield a Venus lander's electronics and components from the roasting Venusian heat for at least 20 minutes. She ran the

### Estate Taxes

Continued from page 1

2001 (EGTRRA) would have resulted in the estate tax exemption dropping to \$1 million and estate taxes increasing to 55 percent. As it stands, 2013 appears to be the year that EGTRRA sunset provisions return, increasing estate taxes.

Planned gifts are excellent ways to reduce your future tax liability and also benefit your heirs and the nonprofits that you support, such as Caltech. For example, if you establish a Charitable Remainder Trust (CRT) through your will or revocable trust, you can reduce your taxable estate, generate an estate tax deduction, and support your heirs and your preferred charities. Designated assets transfer to the CRT, which pays your spouse or heirs income for life or for a set term. When the CRT terminates, any remaining funds benefit your designated nonprofit.

The unpredictability of future tax exclusions and rates makes

material through freeze-thaw cycles that helped her assess its likely response to the hostile environment, as well as life-cycle tests that revealed the rates at which it might degrade between the lander's construction and the actual landing.

John Miles would certainly be pleased. He wanted dedicated scholars like Ismagilov and Juarez to enjoy the same



planning a challenge. We welcome you to contact the Office of Gift Planning with questions about estate planning. Thoughtful preparation can help you simultaneously reduce taxes, benefit family members, and support Caltech. We would be happy to work with you and any professional advisors you may have to ensure that your financial, familial, and philanthropic wishes are carried out.

*If you or your professional advisors would like more information, please contact our office at 626-395-2927 or [giftplanning@caltech.edu](mailto:giftplanning@caltech.edu).*

opportunities that he did. According to his daughter Patricia, John felt that Caltech helped him to achieve everything he accomplished. His and Herbie's gifts confer a lasting benefit—over decades, each will enable many young people and distinguished researchers to pursue the most exciting research they can imagine.

### Recognize This Alumnus?



Photo courtesy of Big T

Growing up just six miles from Caltech in Monterey Park, he enrolled at the Institute in 1935, eventually focusing on geology. When he wasn't in class, he was on the athletic field, where he played baseball, earning a varsity letter. During his fifth year as an undergraduate and then while doing graduate work at Caltech, he also coached the freshman baseball team.

Once while he was playing catcher during a game against Pasadena Junior College (now Pasadena Community College), a young shortstop named Jackie Robinson took a lead off third base and

then "stole home base on me!" He also remembers the junior college for another reason: his future wife, **Perle**, was a student there. She would fill out the box scores for the games that he coached.

After receiving his master's degree in 1940, he joined Chevron as a research geologist. He spent his entire career there, retiring in 1982. He and Perle had two children, a son, Boyd, and a daughter, Janice, whom they took on many vacations, including horseback-riding trips in the backcountry of the High Sierra.

After they joined the Associates, they went on many of the group's trips, including excursions to Yellowstone and Greenland. They became President's Circle members of the Associates and life members of the Caltech Alumni Association. Before Perle died in 2008, they established several charitable gift annuities and pooled income funds, intending to create a family endowment

to support research in the Division of Geological and Planetary Sciences.

Inspired by his memorable experiences, he says that he "had an obligation to support Caltech." Proceeds from the annuities and pooled income funds established by **Melvin Levet (BS '39, MS '40)** and his wife will support important research at Caltech and be a permanent tribute to the Levets.



## How One Couple Changed Physics: A Conversation with Kip Thorne

**D**avid and **Barbara Groce** recently endowed a graduate fellowship in theoretical physics—a field in which such gifts are nearly as hard to find as gravitational waves and the Higgs boson. Because it is endowed, the fellowship will benefit students in perpetuity. And that helps fill a huge need, says **Kip Thorne (BS '62)**, Feynman Professor of Theoretical Physics, Emeritus, whose insights into astrophysics, gravitation, and relativity have shaped contemporary physics.



Kip Thorne (BS '62)

“Theory students end up grading papers to support themselves. This is really a waste,” says Thorne. Few people understand that theory and experiment go hand in hand, and theory students need time to work and collaborate. But David Groce, a physicist, does. He and Barbara like making gifts to important but less-understood areas of research, where the effects are visible.

In part, they endowed the fellowship by way of giving back. David (BS '58, PhD '63) feels that studying with physics legends Willy Fowler, Ward Whaling, and Tommy Lauritsen launched his career applying low-energy nuclear physics to biomedicine.

This gift's story goes back to 1999, when a student named **Yanbei Chen (PhD '03)** came to study under Thorne. “He totally blew me away,” says Thorne. “He was functioning at the level of an advanced postdoc when he was a new grad student straight out of China.”

Chen studied the theory underpinning LIGO, the Laser Interferometer Gravitational-Wave Observatory. LIGO is expected to open an entirely new way of observing events and objects in space, using super-precise, widely separated interferometers to detect the gravitational waves Einstein predicted. According to Thorne, Chen and postdoc Alessandra Buonanno “forced a rethinking of the design of detectors for Advanced LIGO.”

Thorne wanted to give the young grad student more opportunities to contribute, but money was short. “Then, in 2000, out of the clear blue sky, the



David (BS '58, PhD '63) and Barbara Groce were honored with a celebratory dinner in March. The Groces are Torchbearers and Associates President's Circle members.

Groces sent me a gift of \$2,500,” Thorne says. “Those were precious funds because they came with no strings attached.” He used them, and subsequent gifts from the Groces, to send Chen abroad for high-level collaboration, and later introduced the Groces and Chen. David began following Chen's work, giving the new student a friend and supporter in the alumni community.

Thorne remembers the Groces asking him, “What does Yanbei need to be successful?” They increased their support through Chen's graduate school years, and when he moved to the Albert Einstein Institute in Germany to create his own research group, they paid for his visits back to Pasadena so he could mentor two Caltech graduate students. When Caltech hired Chen as an assistant professor, the Groces provided start-up funds and helped support graduate students in his group. “Chen thrives on mentoring students,” Thorne says. “He needs them to flesh out his plethora of great ideas, and they get superb training from him.” The Groces' names appear in the acknowledgments of a growing library of theses and papers.

Recently, after Thorne talked with them about the need for long-term support, the Groces used an IRA Charitable Rollover with other funding mechanisms and matching funds to endow the fellowship. Their gift, which will benefit many future scientists, is already showing results. The Groces were thanked in a major April publication by an extended family of 11 researchers: Thorne, Chen, and a set of their past and present students and postdocs.



*“Until this happened, I couldn't imagine it happening. When someone gives their own money, they really care—you want to live up to their faith in you. There is a personal feeling of encouragement.”*

Yanbei Chen (PhD '03)

## Gifts by Will

The generosity and foresight of alumni and friends is crucial to Caltech's success. Below are just a few of the many individuals who have supported research, education, and programs at Caltech through their wills.

From the estate of **Little M. Hicks**, the Institute has received \$435,700 for its unrestricted use.

Caltech has received \$650,000 from the estate of **Mary C. Dekker**, which will provide support for the Katharine and Margaret Dekker Research Fund.

**Walter G. Wheeler (BS '37)** provided for the Institute through an unrestricted bequest of more than \$682,400.

## Did You Know?

Congress has extended through 2011 legislation that allows people to make tax-free gifts from their IRAs. The Groces chose an IRA Charitable Rollover as a tax-free giving method that wouldn't require the hassle of the Alternative Minimum Tax and would allow them to see their gift make an impact. Here's what you need to know:

- You must be age 70½ or older.
- You can make tax-free gifts of up to \$100,000 from a traditional IRA until **December 31, 2011**.
- If your spouse has a separate IRA account, you may each make a gift of up to \$100,000 for each tax year.

While you cannot claim a charitable deduction for these IRA gifts, your gift will reduce your taxable estate and you will not be required to pay federal income tax on any amounts you distribute to qualified charities such as Caltech. For more information, please contact **Oliver Mueller** (see below).

## Contact Us

For more information about the stories featured in this issue of *Techniques*, or for other questions about deferred gifts, please contact the Office of Gift Planning:

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## Introducing Oliver Mueller and Maddie Fineman

**Oliver Mueller** came to the Office of Gift Planning in October 2010. He is a Personal Financial Planner, Accredited Asset Management Specialist, and Chartered Mutual Fund Counselor. Prior to joining Caltech, he was a director and an investment manager at a regional asset-management firm. He also held the position of Vice President and Branch Manager with Charles Schwab & Co, Inc., where he worked for 12 years. Oliver served as an officer in the U.S. Army Reserve after receiving his B.A. in public administration from the University of Southern California.



Oliver Mueller

**Maddie Fineman** joined the Office of Gift Planning in August 2010. She coordinates events, meetings, and travel arrangements for the gift-planning fund-raisers and director. She is also responsible for administering the office's budget.



Maddie Fineman

Maddie started her career at Caltech as an intern in the Annual Giving Programs Office in 2005. This experience provided her with opportunities to work in a number of other departments within Development and Institute Relations. Most recently, she served as a full-time writer and events assistant for Donor Relations. Maddie earned her B.A. at Occidental College.

## Saying Farewell

**Nichole Baker** is leaving Caltech to pursue a new opportunity as the Vice President of Charitable Business Development at the California Community Foundation. Many readers will recognize Nichole—since 2004 she has developed numerous relationships with alumni and friends and made many wonderful contributions to the Institute's planned giving program. In 2007, Nichole was named Director of the Office of Gift Planning, and in 2009, she was promoted to Senior Director of Philanthropic Services and also began overseeing Caltech's Donor Relations program.



Nichole Baker

The Institute and its alumni, friends, faculty and staff, have all benefitted from Nichole's expertise and commitment. We wish Nichole the best in her future endeavors and thank her for years of dedicated service to Caltech.

### Torchbearers

In recent months, Caltech has added four new members to the Torchbearers Honor Roll:

**Christopher William Ince, Jr.**

**Paul L. Smith (BS '39)**

**Dr. John H. Schwarz and Dr. Patricia M. Schwarz (PhD '98)**



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### Recognize This Alumnus?

Baseball is his specialty: frosh numeral, varsity letter, captainship, Rawling's Trophy, and this year the frosh coach. In addition, he has had time to study geology, manage the Glee Club, work on the "Tech," and join Throop Club and the GeoPaleo Club. (Excerpt courtesy of *Big T*)



Photo courtesy of Big T

See inside for more.

'39  
Class of